

KNOW ALL ABOUT 

# SUN

**the**  
**Great**  
**BALL OF**  
**FiRe**





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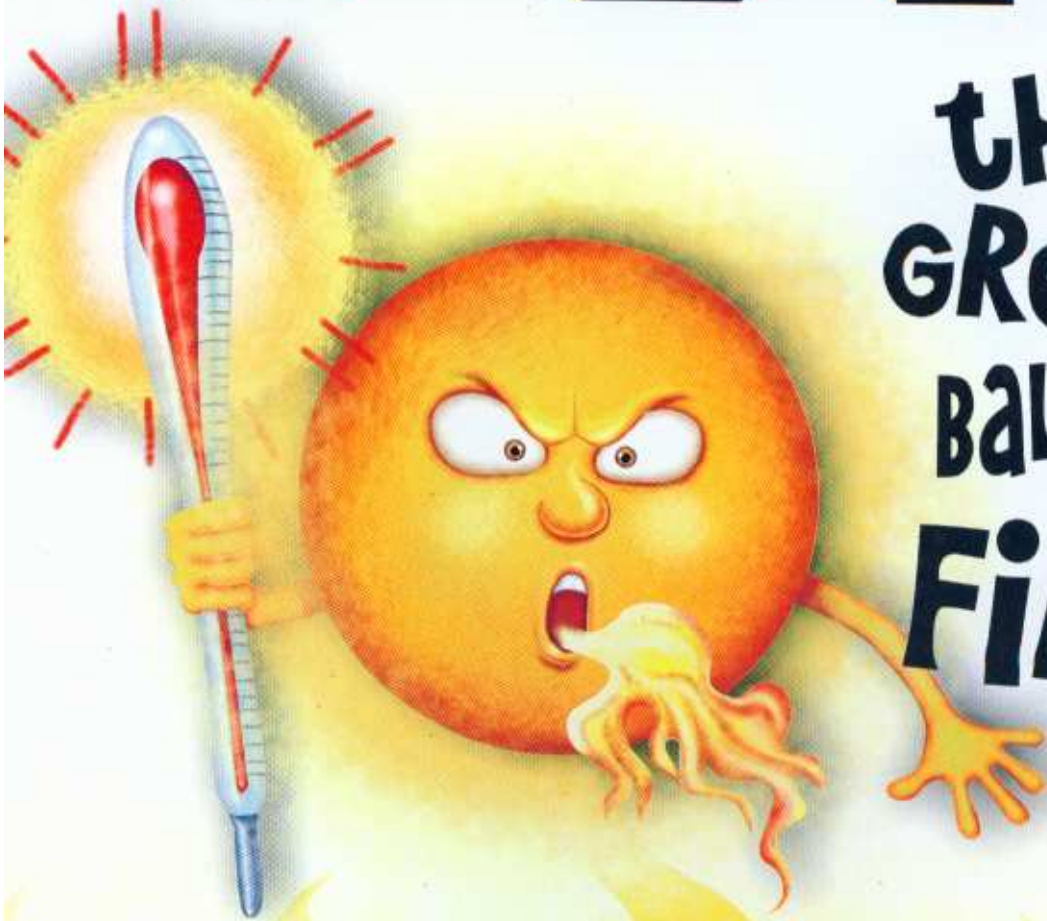
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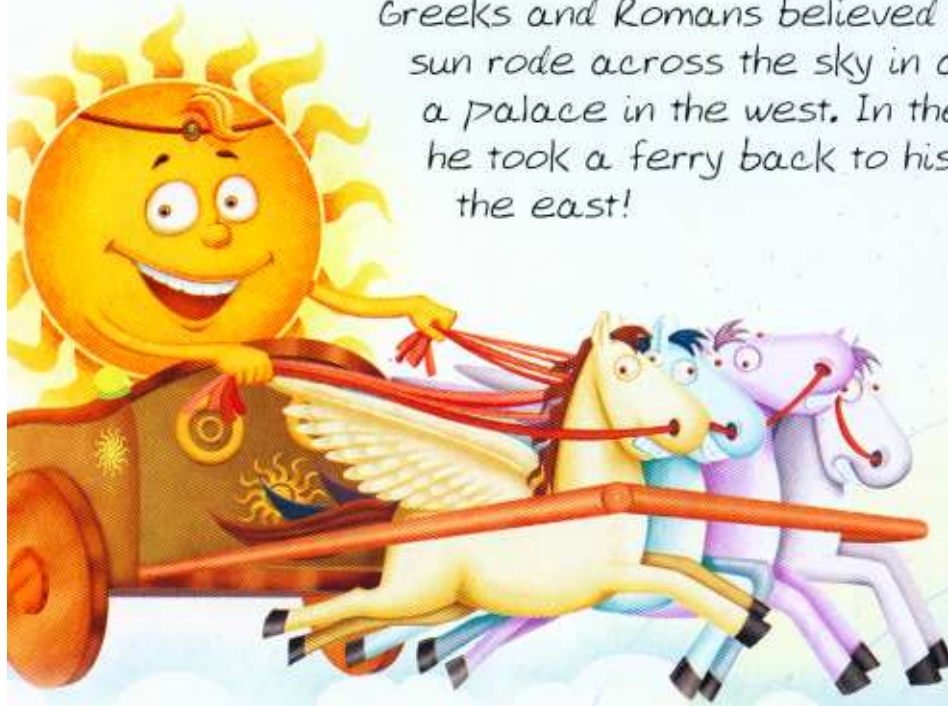
# SUN

the  
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Long ago, men made up fantastic stories about the big fiery ball in the sky—the sun. The Greeks and Romans believed that the sun rode across the sky in a chariot to a palace in the west. In the evening, he took a ferry back to his palace in the east!



**It's a star.**

Today, we know that the sun is a star! The first person to say this was Anaxagoras, who lived in Greece, around 450 BC. The sun does not appear as a twinkling dot in the sky, because it is much closer to the earth than the other stars.

*In Sanskrit, 'surya' means 'sun', and in Latin, 'sol'.*



# THAT BIG LIGHT IN THE SKY



**SUN:**

THE GREAT BALL OF FIRE

**2-3**

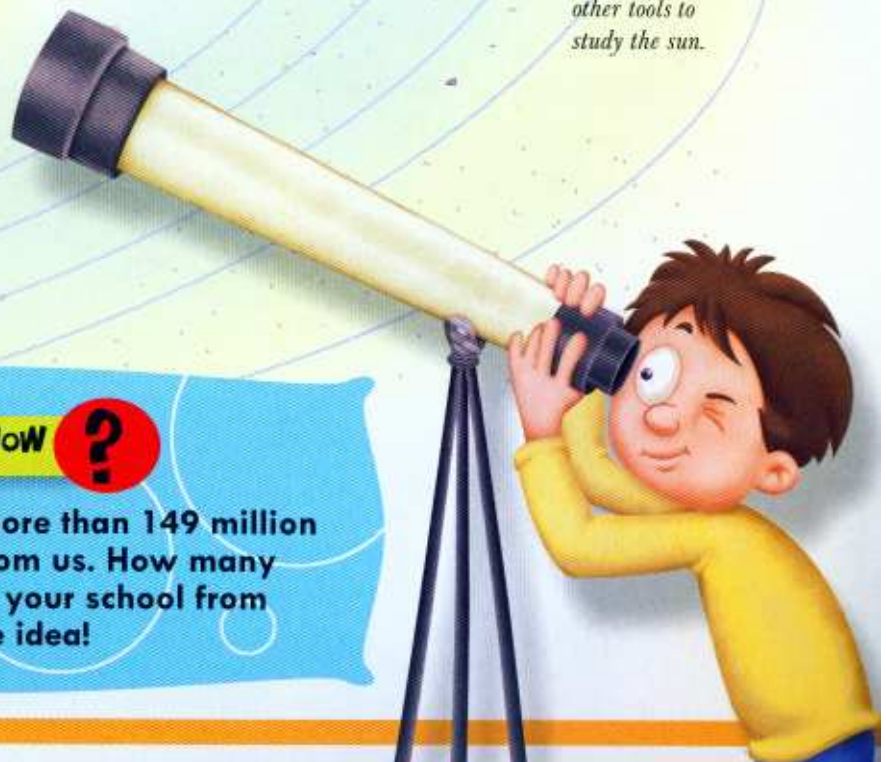
## The solar system

Our earth moves in a fixed path around the sun. This path is called its orbit. Other planets also move around the sun in their own orbits. These planets and other objects moving around the sun are called the solar system.

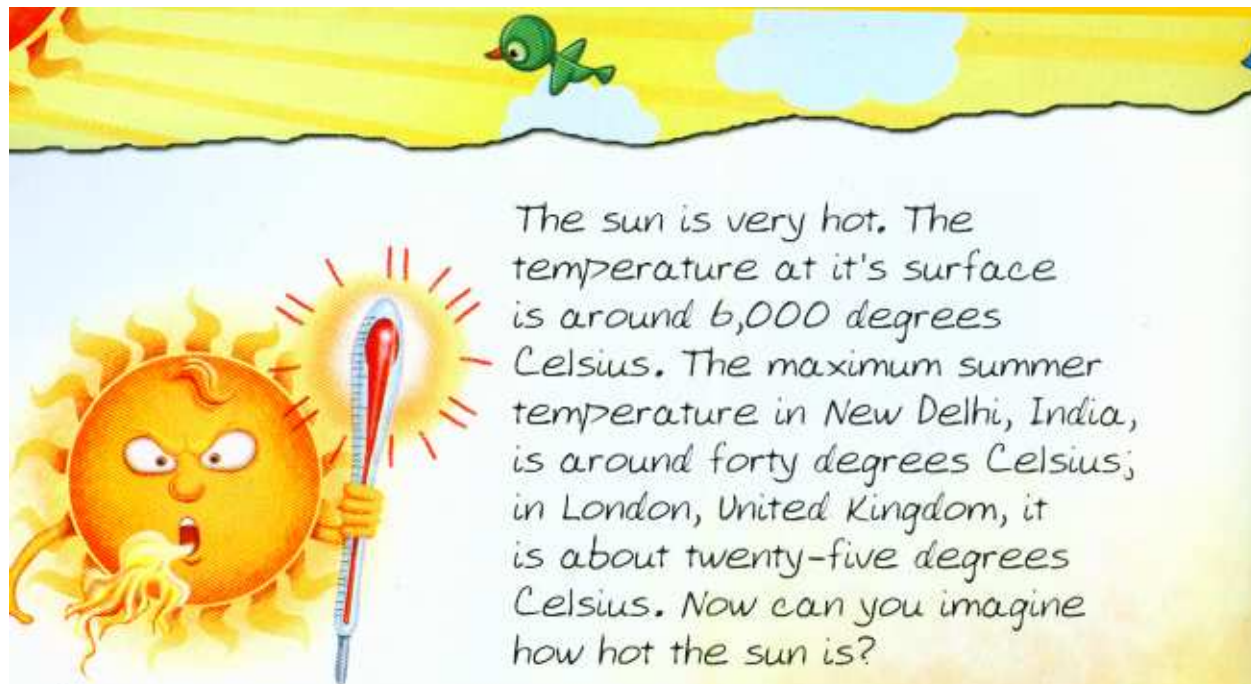
*Scientists use powerful telescopes, satellites, and other tools to study the sun.*

### DID YOU KNOW ?

The sun is a little more than 149 million kilometres away from us. How many kilometres away is your school from your home? Get the idea!







The sun is very hot. The temperature at its surface is around 6,000 degrees Celsius. The maximum summer temperature in New Delhi, India, is around forty degrees Celsius; in London, United Kingdom, it is about twenty-five degrees Celsius. Now can you imagine how hot the sun is?

## FACE THE HEAT

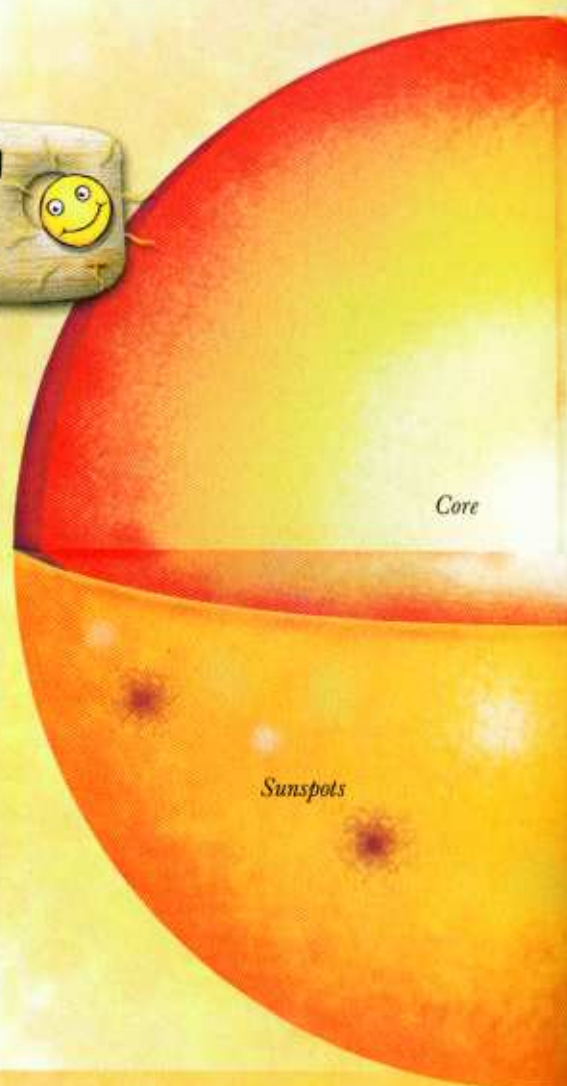


### Dive in!

The innermost part of the sun is called the core. Here, a lot of gases move, churn, and react to produce energy. This energy reaches the earth...that's what you see as a sunbeam.

### Around the sun

The sun's atmosphere is called the corona. This is like a halo around the sun.



## Fireworks!

Often, some giant stream of gas and particles explodes from the surface of the sun. This is called a solar flare. There are also some dark spots on the sun called sunspots.



## Don't look!

The sun is so bright that you shouldn't ever look at it directly without protecting your eyes.



*Corona*

*A CLOSER LOOK  
AT THE SUN*

**DID YOU KNOW**



Gas does not have any shape or volume. It just fills up whatever space it gets! The gases that make up the sun are hydrogen and helium.





All the natural light on the earth comes from the sun.

### **The earth in a spin**

Ever seen a basketball player spin a ball on his finger? As the earth moves in its orbit, it also spins around just like the ball. Now, imagine a line down the centre of the earth. This line is the axis. The earth spins on this axis.

### **How does night happen?**

The part of the earth that faces the sun has day. As the earth spins, or rotates, this part slowly moves away from the sun's light into darkness, or night. Now, the other part faces the sun and has day.



*The part of the earth that faces the sun has day. The part that is away from the sun has night.*



This means that when you are going to school, children on the other side of the earth are being tucked into bed!



# WHERE DOES THE SUN GO AT NIGHT?



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**6-7**

## The dark half

When the sun appears to be setting, it is actually our side of the earth that is rotating away from it. So we don't see the sun, nor do we get its light and warmth.

## HOW DAY AND NIGHT HAPPEN

*When there is day time in India,  
it is night in the United States.  
Now you know why!*

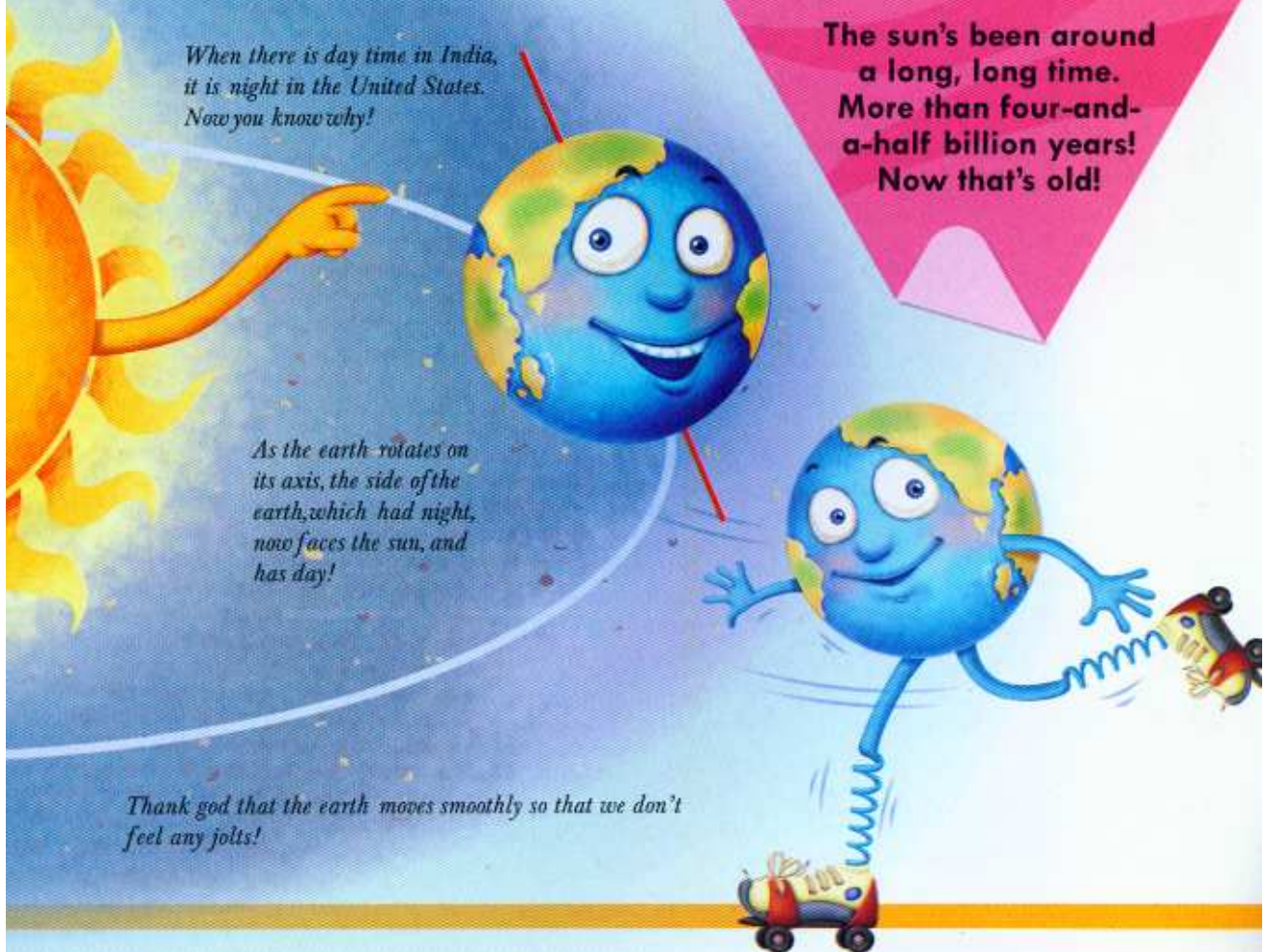
*As the earth rotates on  
its axis, the side of the  
earth, which had night,  
now faces the sun, and  
has day!*

*Thank god that the earth moves smoothly so that we don't  
feel any jolts!*

**Did You Know ?**



The sun's been around  
a long, long time.  
More than four-and-  
a-half billion years!  
Now that's old!





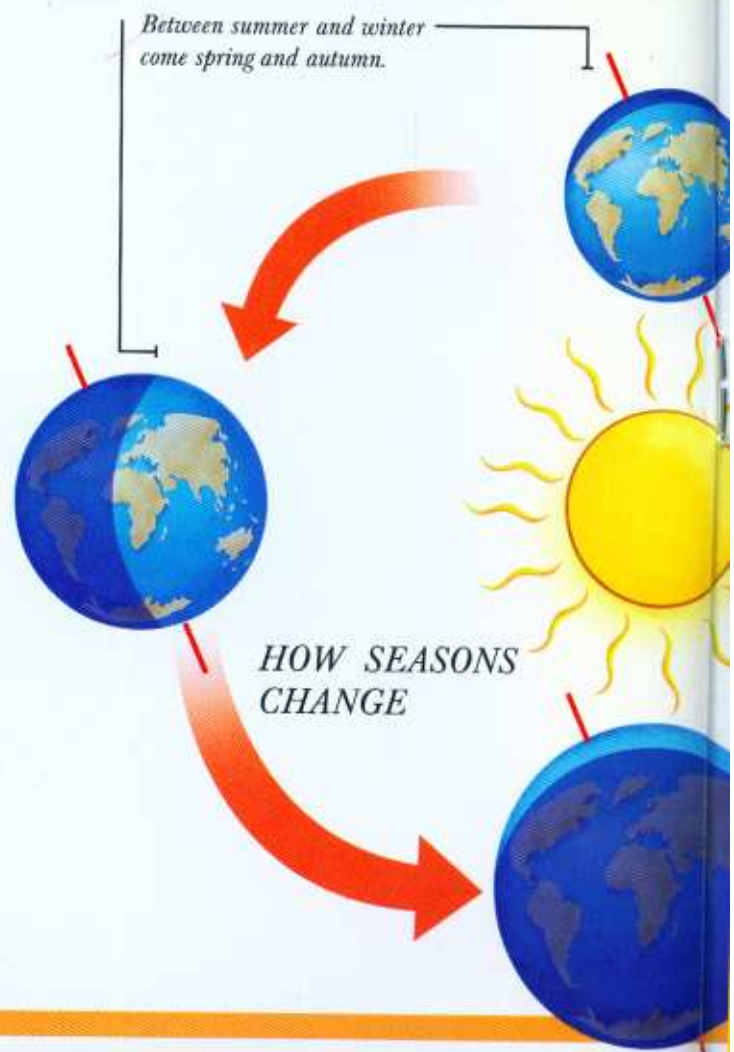


## WHAT'S THE BIG DEAL?

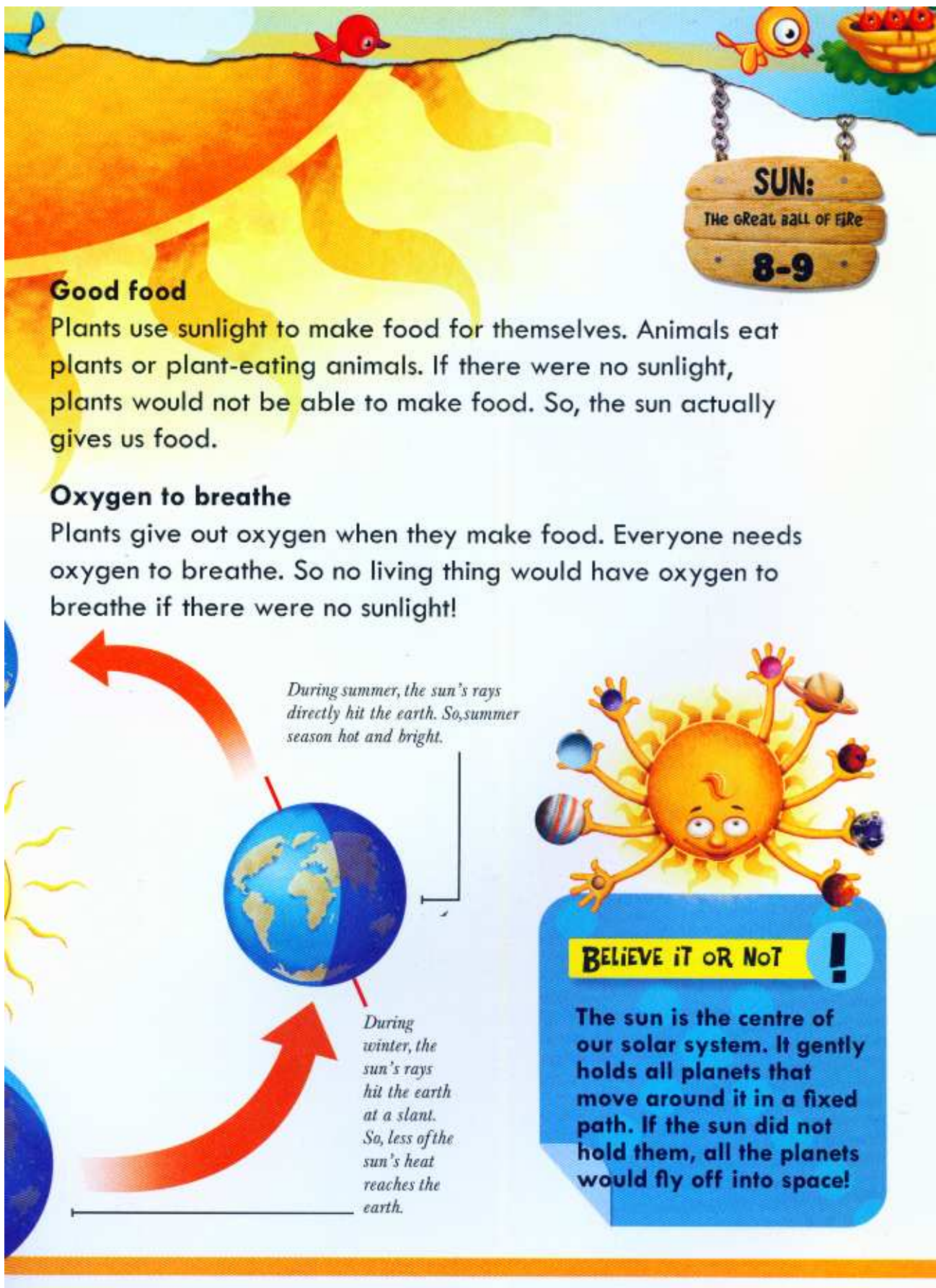
The sun gives us light and heat. But this is only one of the important things it does.

### Cycle of seasons

Seasons occur because the earth's axis is slightly tilted. So as the earth moves around the sun, one half of the earth is tilted towards the sun. This half gets the direct rays of the sun, and so has summer. The other half is tilted away from the sun and receives slanting rays, and so has winter.







### Good food

Plants use sunlight to make food for themselves. Animals eat plants or plant-eating animals. If there were no sunlight, plants would not be able to make food. So, the sun actually gives us food.

### Oxygen to breathe

Plants give out oxygen when they make food. Everyone needs oxygen to breathe. So no living thing would have oxygen to breathe if there were no sunlight!

*During summer, the sun's rays directly hit the earth. So, summer season hot and bright.*



*During winter, the sun's rays hit the earth at a slant. So, less of the sun's heat reaches the earth.*



### BELIEVE IT OR NOT



The sun is the centre of our solar system. It gently holds all planets that move around it in a fixed path. If the sun did not hold them, all the planets would fly off into space!



## SUN - THE SECRET OF HEALTHY ENERGY

We humans use a lot of energy. We use it to light our homes, cook our food, and run our cars. Most of this energy comes from coal, diesel, and petrol. But the way we guzzle energy, these will run out. So we are looking for other ways to meet our energy needs. And one great source is the sun!

### Energy in the sunbeams

The sun gives us solar energy. And it is nice enough to share its energy with us! Every little sunbeam is choc-a-bloc with neat little packages of energy from the sun. The fancy word for these energy packets is photons.







**DID YOU KNOW ?**

On a bright, sunny day, have you ever tried burning a piece of paper using a magnifying glass? People used the magnifying glass to burn things as early as 7 BC!

**SUN:**

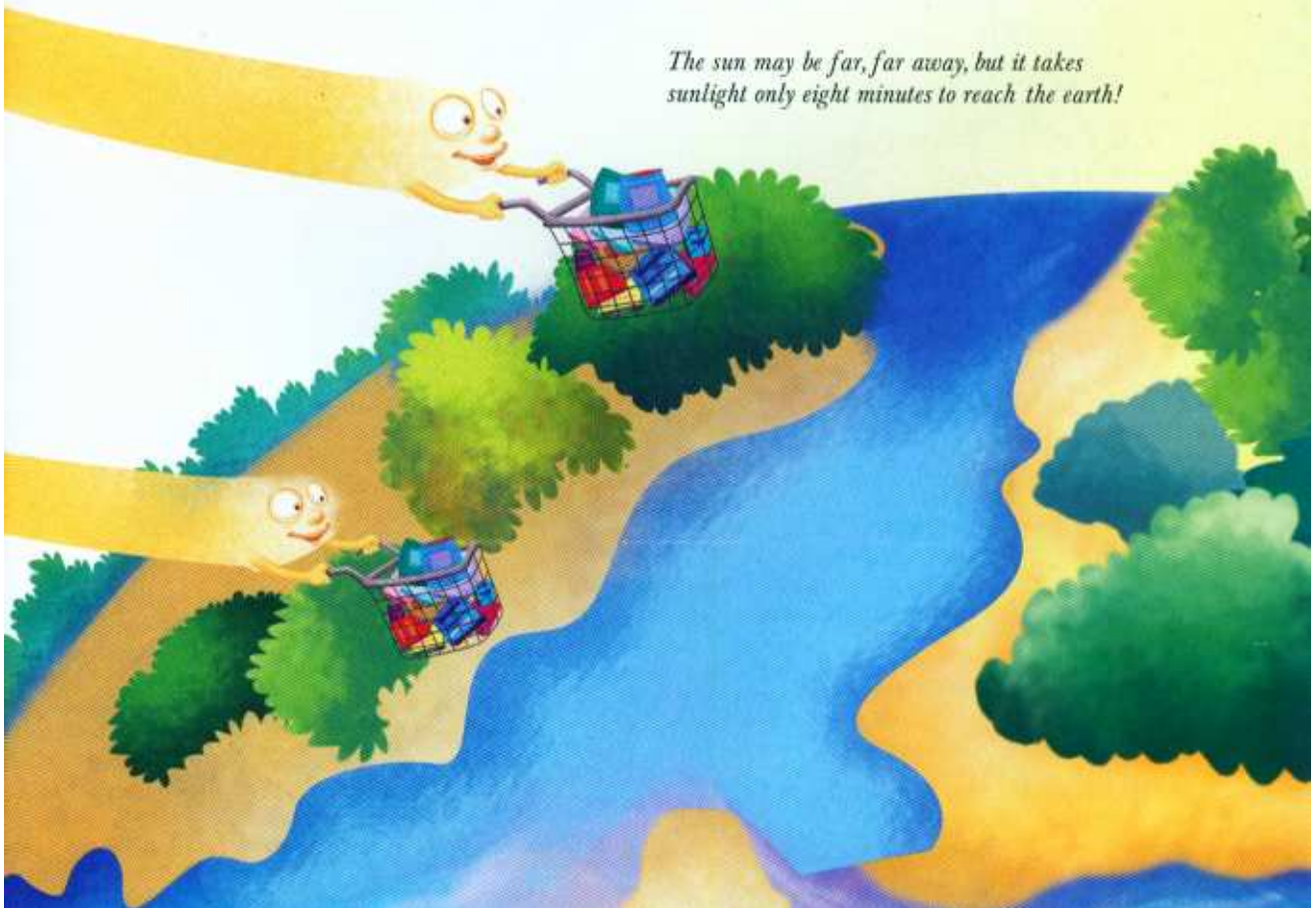
The Great Ball of Fire

**10-11**

**The best part**

Solar energy is clean. It doesn't leave a dirty mess behind like the usual sources of energy. And it will be around as long as the earth will be there! We can use it as much as we need.

*The sun may be far, far away, but it takes sunlight only eight minutes to reach the earth!*





Solar energy has been around forever. And it can do more than just dry our clothes.

*Far-flung villages use solar lanterns to light up their homes.*



### Where is solar energy being used?

Have you seen a house with slanting, silvery panels on its roof? They are solar panels that catch the sun's energy, which could be used for heating water.



*There are calculators that use solar energy and there are smart solar-powered street lights too.*

Those wings that open out from a satellite also catch solar energy to power it. (Well, you can't exactly plug the space satellite down here on earth!)

*You can cook food in a solar cooker. Keep it in a sunny place and leave the rest to the sun.*





# CATCH SOME SUNLIGHT



**SUN:**  
THE GREAT BALL OF FIRE  
**12-13**

*The shiny panels that you see on rooftops catch the sun's energy to heat water.*



## How do we catch solar energy?

Sunbeams can directly heat stuff for us or heat up silicon (that's the thing that makes up sand) in solar panels and give us electricity. That requires a smart bit of complicated engineering.

*The first spacecraft to use solar power, Nimbus, was launched in 1964.*



**BELIEVE IT OR NOT !**

The energy that the sun sends us in one hour can meet the whole world's energy needs for almost a year, if we could use it.



## SOME THINGS **WACKY**

Scientists are trying to collect and use the sun's energy in newer ways. Today, there are many interesting and clever ways of using solar energy.

**Grass cutting and mowing**  
Solar panels attached to a lawn mower help mow the lawn without having to plug the machine to a socket.





### Solar anti-mosquito guard

This solar-powered gadget claims to drive mosquitoes away!

### Solar energy from the road

Ever stepped on the road with bare feet in summer? Hot isn't it? Scientists in the Netherlands are using this heat to keep buildings near roads warm.



### Solar-powered cars

Funky cars, with super cool designs, are using the energy of the sun as fuel! The science behind solar-powered cars is improving. Let's hope more of them will hit the roads, and we can say bye-bye to all that smoke and pollution. Imagine no more stops for petrol!

**FUNNEE!**



Way back in 212 BC, Greek scholar Archimedes set fire to Roman ships by reflecting sunlight off huge mirrors. How's that for a clever idea!



Make your own solar cooker. It's clean, safe, and free! It will take a bit longer to cook food, but then the power is coming from a long way!

### You will need

Safety scissors, thick cardboard box with a lid (a pizza box works great), aluminum foil or an empty chips packets, tape and glue, black chart paper, a clear plastic sheet, a ruler or a stick, and sunlight!



### Make it so

- Cut along three sides of the lid as shown in the diagram.
- Fold this flap back along the fourth side.
- Paste chips packets (shiny side out) or aluminium foil on this flap. This will redirect all those sunbeams to the food inside.
- Now cut a piece of plastic sheet slightly larger than the opening you have made on the lid. Stick it tightly on the box top (from the inside). You get a nice window.
- Line the box with foil from inside and cover it with black paper.
- Use the ruler/stick to support the flap as shown.



### Try this

Use your cooker to heat burgers, boil rice or noodles.





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THIS IS A  
**GREEN**  
BOOK



# SUN

## the Great Ball of Fire

The big, bright sun is just another star! Really, it is true! Did you know that its rays are full of packets of energy? And that there are many clever ways in which people around the world are using this energy!

Read all about what happens inside the sun and all that it does for us.  
Other books in this series:

Wind: The Air in a Hurry!  
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Soil: The Precious Earth!  
Space: The Great Beyond!  
Earth: The Blue Marvel!

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